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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,689	05/09/2006	Tomas Lieback	3670-63	4425
23117 7590 12/04/2009 NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203				
EXAMINER AKINYEMI, AJIBOLA A				
ART UNIT 2618		PAPER NUMBER		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/578,689

**Applicant(s)**

LIEBACK ET AL.

**Examiner**

AJIBOLA AKINYEMI

**Art Unit**

2618

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 August 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3, 7, 8 and 11-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 7, 8 and 11-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB06)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Paper No(s)/Mail Date \_\_\_\_\_
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 7-8, 11-12, 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Haapoja (Pub. No.: US 2002/0127982A1).

With respect to claim 1 and 4:

Haapoja discloses a method/means for processing a received electromagnetic signal in the microwave range, the signal comprising at least a first and a second carrier wave at respective first and second carrier frequencies (fig.3, item 240), comprising splitting the received signal into a first and a second branch (fig.3, I channel and Q channel), a first shifting of the carrier frequency of the signal in each of the branches by respective first frequency shifts (fig.3, item 224A, 224B), filtering the signal in the first and the second branch in respective first filters a second shifting of the carrier frequency of the signal in each of the branches by respective second frequency shifts (fig.3, item 226A, 226B), which method is characterized in that there is a first frequency distance between the first frequency shifts, such that after the first shift (fig.3, item 224A), the first carrier wave in the first branch (fig.3, I channel) has essentially the same center frequency as the second carrier wave in the second branch (fig.3, Q channel), the first filters (fig.3, item 226A) have essentially the same filter characteristics, so that the signal in each branch

after the first filter (fig.3, item 226A) comprises only one of said first or second carrier wave, but at essentially the same center frequency.

With respect to claim 2 and 5:

Haapoja discloses a method wherein the second frequency shifting (fig.3, second shifting is being carried out in item 220A) is carried out by different shifts in each of the branches, the difference between the shifts in the branches corresponding to a desired frequency separation between the first and the second carrier waves (fig.3).

With respect to claim 3, 6, 8 and 10:

Haapoja discloses a method wherein the signals in the two branches are combined after the second frequency shifts, and then filtered and further processed (fig.3, the signal are combined in item 220A and filtered by item 182).

With respect to claim 7 and 9:

Haapoja discloses a method/means for processing a received electromagnetic signal in the microwave range, the signal comprising at least a first and a second carrier wave at respective first and second carrier frequencies (fig.3, item 240), comprising splitting the received signal into a first and a second branch (fig.3, I channel and Q channel), a first shifting of the carrier frequency of the signal in each of the branches by respective first frequency shifts (fig.3, item 225), filtering the signal in the first and the second branch in respective first filters, a second shifting of the carrier frequency of the signal in each of the branches by second frequency shifts (fig.3, item 226A, 226B), which method is characterized in that the first filtering in the first (fig.3, item 226A) and second (fig.3, item 226B) branch filters out one of the carrier waves in each branch, so that each branch,

after the first filter, comprises only one of the carrier waves, and in that the second shift (fig.3, item 220A) is carried out by the same shift amount in both of the branches.

With respect to claim 11:

Haapoja discloses a device for processing a received electromagnetic signal in the microwave range, comprising: a splitter (fig. 3) configured to split the received signal (fig.3, item 240) into a first branch (fig.3, I channel) and a second branch (fig.3, Q channel), the received signal including at least a first carrier wave at a first carrier frequency (fig.3, I channel) and a second carrier wave (fig.3, Q channel) at a different second carrier frequency; a first frequency shifter (fig.3, item 224A, 224B) configured to shift the different first and second carrier frequencies (fig.3, I, Q) of the signal in each of the branches by respective first frequency shifts (fig.3, item 224A, 224B), wherein there is a first frequency distance between the first frequency shifts such that, after the frequency shift, the first carrier wave in the first branch has substantially the same center frequency as the second carrier wave in the second branch (fig.3, item 225 is common to both 224A and 224B so they have the same center frequency); a filter (fig.3, item 226A, 226B) configured to filter the frequency-shifted signal in the first branch (fig.3, I) and a filter configured to filter the frequency-shifted signal in the second branch (fig.3, Q), wherein the filter in the first branch and the filter in the second branch have substantially the same filter characteristics so that the signal in one of the branches after filtering includes only the filtered first carrier wave and the signal in the other of the branches after filtering includes only the filtered second carrier wave, but both of the first filtered carrier wave and the second filtered carrier wave are at essentially the same

center frequency (fig.3, item 225 is common to both 224A, 224B and filter 226A, 226B has the same characteristic so signal in each branch has the same center frequency); and a second frequency shifter (fig.3, item 220A) configured to shift the carrier frequency of the filtered signal in each of the branches by respective second frequency shifts.

With respect to claim 12:

Haapoja discloses a device in which the second frequency shifters are configured to employ different shifts in each of the branches, the difference between the different shifts in the branches corresponding to a desired frequency separation between the first carrier waves and the second carrier waves (fig.3).

With respect to claim 14:

Haapoja discloses a device for processing a received electromagnetic signal in the microwave range, comprising: a splitter (fig.3, output of LNA split into I and Q channel) configured to split the received signal into a first branch and a second branch (I and Q branch), the received signal including at least a first carrier wave at a first carrier frequency and a second carrier wave at a different second carrier frequency(fig.3); a first frequency shifter ( fig.3, item 224) configured to shift the different first and second carrier frequencies of the signal in each of the branches by respective first frequency shifts (fig.3, item 224); a first branch filter (fig.3, item 226A) configured to filter the frequency-shifted signal in the first branch so that after filtering, the first branch includes only one of the filtered first and second carrier waves; a second branch filter (fig.3, item

226B) configured to filter the frequency-shifted signal in the second branch so that after filtering, the second branch includes only the other of the filtered first and second carrier waves; and a second frequency shifter (fig.3, item 222) configured to shift the carrier frequency of the filtered signal in each of the branches by a same second frequency shift in both branches.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haapoja (Pub. No.: US 2002/0127982A1) and further in view of Tu (Patent No.: US 6888888B1).

With respect to claim 13 and 15:

The rejection of claim 11 and 14 are incorporated; Haapoja did not disclose filtering a combined signal and then converted the filtered signal to digital format. Tu discloses this limitation (fig.4A). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the above limitation for a design purpose.

### ***Response to Arguments***

6. Applicant's arguments filed 08/27/2009 have been fully considered but they are not persuasive. Regarding claim 1 and 7, applicant argued that The Haapoja did not disclose receiving two carrier frequencies at the receiving antenna and that both carrier waves did not have the center frequency. Examiner respectfully disagrees with this statement because Examiner give claim limitation broadest reasonable interpretation. The claim limitation says **"received electromagnetic signal"**. The claim did not say receiving two carrier signals from the antenna and based on the Haapoja reference, a signal is being received from the antenna (fig.3, item 240) which split into first and second carrier signal in their respective first and second branch which is (fig.3, I branch and Q branch). Also at the first shifting, the first branch and the second branch has a common phase shift (fig.3, item 225), which means that they have the same center frequency or characteristics.



***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AJIBOLA AKINYEMI whose telephone number is (571)270-1846. The examiner can normally be reached on monday- friday (8.30-5pm) Est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, YUWEN PAN can be reached on (571) 272-7855. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AA  
/Yuwen Pan/  
Primary Examiner, Art Unit 2618